

# Endoscopic Orbital Decompression for Optic Neuropathy in Thyroid Ophthalmopathy

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## SUMMARY

**Optic neuropathy, an uncommon manifestation occurs in 5% of patients with Graves' ophthalmopathy. Its outcome is good if early and proper treatment given. We reported a 49 years old male patient of Graves' disease with bilateral optic neuropathy. He underwent bilateral transnasal endoscopic orbital decompression with marked improvement of visual acuity bilaterally. The preoperative visual acuity was 6/36 in his right eye and 6/60 in his left eye. Two days after operation, his visual acuity was 6/12 in his right eye and 6/24 in his left eye. Transnasal endoscopic orbital decompression is a choice of treatment in optic neuropathy in thyroid ophthalmopathy after trial of corticosteroids.**

## KEY WORDS:

*Optic neuropathy, Graves' ophthalmopathy, Endoscopic orbital decompression*

## INTRODUCTION

Graves' ophthalmopathy is an extrathyroidal manifestation of autoimmune thyroid disease with orbital tissues as targets. Clinically, it is manifested by a spectrum of eye changes ranging from eyelid retraction and stare to loss of vision. A grading scale for the disease defined by the American Thyroid Association is outlined in Table 1<sup>1</sup>.

Optic neuropathy occurs in 5% of patients with Graves' ophthalmopathy. It is an uncommon presentation and caused by pressure at the orbital apex by expansion of the intraorbital contents particularly the extraocular muscles. Optic neuropathy of Graves' ophthalmopathy patient can be asymptomatic or presented with blurred vision, diminished colour contrast, reduced brightness perception, decreased visual acuity, visual field defects and complete loss of vision. Treatment options for patients with Graves' optic neuropathy include oral corticosteroids, retrobulbar corticosteroids, orbital radiotherapy and surgical orbital decompression<sup>2</sup>. High dose of corticosteroid therapy remains as the first line management for Graves' optic neuropathy. However, when it fails, surgical orbital decompression is a definite choice.

We report a 49-year-old male patient of Graves' disease with bilateral optic neuropathy. He underwent bilateral transnasal endoscopic orbital decompression with marked improvement of visual acuity bilaterally after trial of high dose of corticosteroids.

## CASE REPORT

A 49-year-old Malay gentleman was diagnosed as Graves' disease in early July 2006. He was referred for ophthalmologic evaluation due to decrease in his vision. Ophthalmological examination revealed a best corrected visual acuity of 6/36 in his right eye and 6/60 in his left eye. There was a mild retraction of the upper eyelids bilaterally. Hertel measurements were 21mm in the right eye and 23mm in the left eye, suggesting of proptosis bilaterally. Extraocular movements were minimally restricted bilaterally. Visual fields examination revealed left central scotoma and normal for the right eye. His both pupils were equal and reactive. Both fundi appeared normal. A computed tomographic scan of the orbits demonstrated bilateral enlarged rectus muscles with left optic nerve compression (Figure 1).

He was given high dose of oral corticosteroids initially. However, the visual acuity didn't improve. Bilateral transnasal endoscopic orbital decompressions were performed under general anesthesia. An uncinectomy preceded the generous middle meatal antrostomy. The ethmoid air cells were removed from the agar nasi cells to the face of the sphenoid. The air cells adjacent to the frontal recess were preserved. The lamina papyracea was fractured and removed leaving behind an anterior bony orbital strut. The medial orbital floor was then fractured inferiorly and removed preserving the infraorbital nerve. The periorbita was incised from posterior to anterior. Pressure was applied to the globe to enhance repositioning of fat and enlarged muscles. Septations in fat were incised superior and inferior to the medial rectus.

He showed a marked improved in visual acuity postoperatively. On first postoperative day, his visual acuity was 6/24 in his right eye and 6/36 in his left eye. On second postoperative day, his visual acuity was 6/12 in his right eye and 6/24 in his left eye. Hertel measurements were reduced by 3mm in both eyes. Followed-up was done in Eye and ENT clinics. His visual acuity was maintained 6/12 in his right eye and 6/24 in his left eye during his last follow-up a year postoperatively.

## DISCUSSION

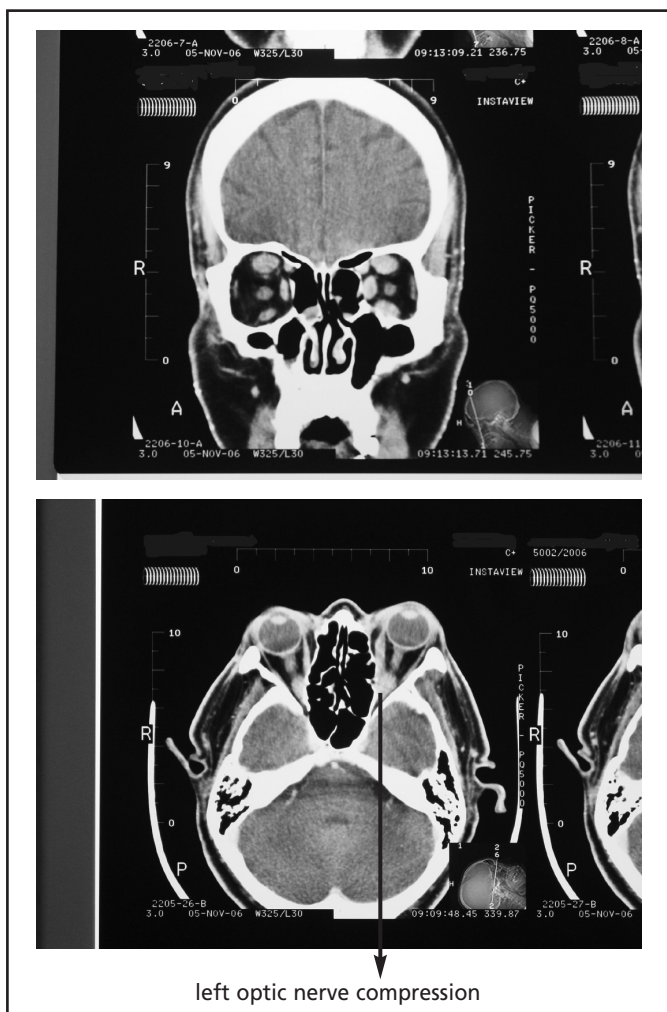
Surgical orbital decompression is a mainstay treatment for Graves' ophthalmopathy after failed medical treatment. The primary goal of orbital decompression is to increase the orbit space to accommodate the increased volume of orbital tissue.

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**Table I: American Thyroid Association Grading System of Graves' ophthalmopathy<sup>1</sup>**

Grade	Definition
0	No physical signs or symptoms
I	Only signs, no symptoms (signs limited to upper eyelid retraction, stare and eyelid lag)
II	Soft tissue involvement (signs and symptoms)
III	Proptosis
IV	Extraocular muscle involvement
V	Corneal involvement
VI	sight loss (optic nerve involvement)



**Fig. 1:** A computed tomographic scan of the orbits demonstrated bilateral enlarged rectus muscles with left optic nerve compression. Coronal view (up) axial view (down).

This results in reduction of proptosis, decreased optic nerve compression or stretch and resolution of most of the symptoms because of orbital congestion and increased soft tissue volume<sup>3</sup>.

The advent of intranasal endoscopes has significantly improved anatomic visualization of the nose and paranasal sinuses. This has allowed for a transnasal decompression of

the medial and inferior orbital walls that compared well with traditional methods. Endoscopes also permit a maximal posterior orbital decompression at the orbital apex, an area often not fully accessible via transantral routes (The Walsh-Ogura decompression). This provides optimal decompression of the optic nerve in cases of optic neuropathy<sup>4</sup>.

Endoscopic orbital decompression also has significantly reduced postoperative complications compared with transantral approach. These include antral pain, facial swelling, painful gingival scars, parathesia from damage to infraorbital nerve, damage to nasolacrimal duct, dental problem, oroantral fistula and hypoglobus<sup>5</sup>.

Despite having many advantages, a purely endoscopic approach does have some limitations. It is difficult to remove bone lateral to the inferior orbital nerve or anterior to the middle meatal antrostomy. Decompression of the medial wall and floor only may result in significant medial orbital prolapse. This imbalance may cause diplopia and patients should be warned about the risk. There may be rare occasions where the severity of the disease is such that the inferior orbital wall and lateral orbital wall need to be completely resected and in such cases, it is well recognized that a combination of an endoscopic and transconjunctival approach may be necessary<sup>5</sup>.

**CONCLUSION**

In conclusion, endoscopic decompression of the medial orbital wall and floor gives reasonable good outcome in optic neuropathy secondary to Graves' disease with minimal morbidity as long as the problem detected in the earlier stage. With the advances of transnasal endoscope, endoscopic orbital decompression should be considered as a standard treatment option for Graves' ophthalmopathy.

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